



PATENTS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: Application of	)	
Warmerdam et al.	)	Examiner: D. Brunzman
	)	
Serial No.: 08/154,617	)	Group Art Unit: 1108
	)	
Filed: 18 November 1993	)	
	)	
For: STARCH-BASED ADHESIVE	)	
	)	Date: May 10, 1995

RULE 132 DECLARATION OF ANIL B. GOEL, Ph.D

Honorable Commissioner of  
Patents and Trademarks  
Washington, D.C. 20231

Sir:

I, Dr. Anil B. Goel, do hereby declare and say as follows:

1. I am one of the inventors of the subject matter disclosed and claimed in the subject application. I received my Ph.D. degree in Chemistry from the University of Rajasthan, India in 1975. I joined the Swift Adhesives division of Reichhold Chemicals, Inc. in 1990 as Vice President of Technology.

In my last 20 years of association with universities and the chemical industry, I received 125 U.S. patents, 35 international patents and over 150 scientific publications covering a variety of chemistries and technologies for adhesives, coatings, composites, RIM, castable elastomers, specialty chemicals, monomers and polymers, and commodity chemicals.

2. The subject application claims a starch-based adhesive composition for use in cigarette manufacturing. The adhesive composition was developed to perform at equipment speed of a typical cigarette making machine, i.e., speeds greater than 5,000 cigarettes per minute. The adhesive composition of the invention must include a dispersible starch and a modified starch that thickens or gels on heating to a temperature than about 50°C.

3. I have reviewed the reference, Foran et al., U.S. Patent No. 5,190,996 cited in the Office Action. Foran et al. is primarily directed to an adhesive for corrugated paperboard and teaches away from the present invention. Foran et al. requires that an alkali base is one of the four essential ingredients of the adhesive. Foran et al. gives as examples of suitable alkali curing agents sodium hydroxide, potassium hydroxide, calcium hydroxide, barium oxide, sodium carbonate, and sodium silicate. Starch-based adhesive composition for use in cigarette manufacturing of the present invention does not include any alkali. In fact, the use of alkali as described in Foran et al. would be detrimental and undesired to perform at particularly the equipment speed of a typical cigarette making machine.

4. In order to demonstrate the criticality of not having alkali and criticality of the composition of the present invention, comparative testing by following the basis and teachings of the Foran et al. was conducted. An adhesive sample was prepared by following the procedure of Example 1 of the present application, however, also incorporating alkali. Thus, an adhesive composition comprising 20 percent ethylated starch, 15 percent unmodified corn starch, 10 percent urea, 49.65 percent water, 0.1 percent defoamer, 0.15 percent Proxel GXL preservative is formed and mixed with 5 percent of 15 percent sodium hydroxide solution. The resulting product had the initial viscosity of 23 poise.

This adhesive and the adhesive of our system disclosed via Example 1 were compared in terms of shelf stability, an essential item for the product and application. 500g samples of both systems were placed in an oven at 40°C for 24 hours and the viscosities of each were measured at room temperature. A dramatic change in the viscosity was noticed in the comparative example. Our system viscosity remained constant whereas the comparative example viscosity drifted from initial 23 poise to 36 poise, a change of 56 percent. Such a

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viscosity drift is not acceptable in an adhesive for use in cigarette manufacturing. Thus, I believe that the claimed starch-based adhesive composition is distinguishable over Foran et al.

5. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Anil B. Goel  
Anil B. Goel

5/22/95  
Date

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Original in parent appl.

AMG  
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